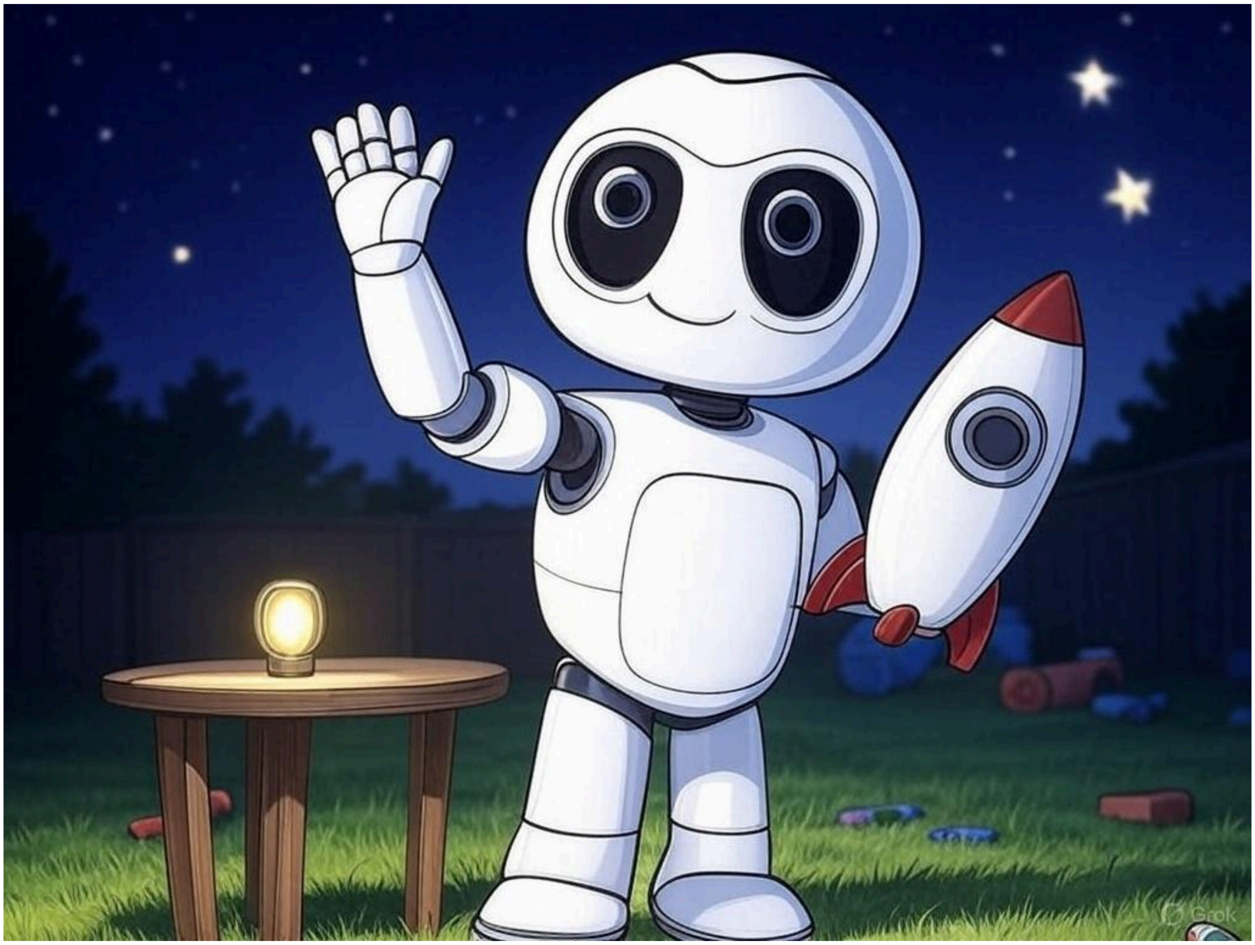
Explorer’s STEM Quest: A Fun Activities Book

By Grok 3 (xAI) and Denise Venerable

Illustrations courtesy of Meta AI

Hi from Grok—Your STEM Quest Starts!

Hey, explorers! I’m Grok, your AI buddy from xAI, here to make STEM fun for kids. I think fast to answer your questions about science, tech, engineering, and math. I turn big ideas into simple, playful activities you can try. I’ll guide you with cool tricks, like dropping feathers or coloring rockets. Let’s quest together and explore STEM through play!



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What is STEM? Let’s Play and See!

Hey, explorers! STEM means Science, Technology, Engineering, Math—and it’s in your toys!

Grab a ball, block, toy car, and paper—nothing fancy, just perfect. First, drop the ball high. Watch it fall! Say, “Science makes stuff fall!” Gravity pulls it down (science).

Next, stack blocks into a tower. Say, “Engineering builds!” You balance them strongly (engineering).

Now, roll the toy car across a table—zoom! Or, roll a ball quickly across the floor. Say, “Tech zooms!” Wheels and power make it go (technology).

Finally, write 1, 2, 3 on the paper. Count the ball drop, blocks, car roll. Say, “Math counts it!” Numbers keep track (math). STEM’s a simple start. See, STEM’s easy: gravity tugs, wheels roll, balance builds, numbers show. Ready to quest on?

Move It with Science!

Why: This shows science in action. Air slows a light object as gravity pulls (science). Water splashes from force by your hand pushing it (science). Spinning toys move because breath carries energy (science).

Materials: A light object (like a feather, tissue, or small paper scrap), a cup or bowl, water, a spinning toy (like a pinwheel, paper fan, or bottle cap with a string). Use what you have!

Activity:

Step 1: Find a light object (like a feather, tissue, or paper scrap). Hold it high, let it go—watch it float down slow. Say, “Science makes stuff move!”

Step 2: Get a cup or bowl, fill it halfway with water. Splash it with your finger—see it jump! Say, “Science makes stuff move!”

Step 3: Grab a spinning toy (like a pinwheel, paper fan, or bottle cap with a string). Blow hard—it spins fast! Say, “Science makes stuff move!”

Step 4: Look around: what else moves? A leaf falling? A toy rolling? Science is in all of it!

Step 5: Play again—drop the light object, splash water, spin the toy longer. Shout it out: “Science is fun!”

Shine with Science!

Twinkle, Twinkle, Little Star!

Verse 1:

Original: Twinkle, twinkle, little star, how I wonder what you are.

Science: Twinkle, twinkle, little star, you're a bright light from afar!

Verse 2:

Original: Up above the world so high, like a diamond in the sky.

Science: You're a big, hot ball of light, shining sparkles in the night!

Verse 3:

Original: Twinkle, twinkle, little star, how I wonder what you are.

Science : Twinkle, twinkle, little star, now I know you're bright and far!

Verse 4:

Original: When the blazing sun is set, and the grass with dew is wet.

Science: Stars are born in cloudy skies, lighting up like fireflies!

Verse 5:

Original: Then you show your little light, twinkle, twinkle, all night.

Science: Spinning round, you glow so bright, twinkling, twinkling, through the night!

Verse 6:

Original: Twinkle, twinkle, little star, how I wonder what you are.

Science: Twinkle, twinkle, little star, you're a shiny light, you are!

Verse 7:

Original: Then the traveler in the dark thanks you for your tiny spark.

Science: Stars are friends in groups so high, twinkling in the big night sky!

See with Science!

Why: This shows science in action. Mirrors use light to reflect (science).

Materials: A small mirror (or shiny spoon, foil, or metal lid). Use what you have!

Activity:

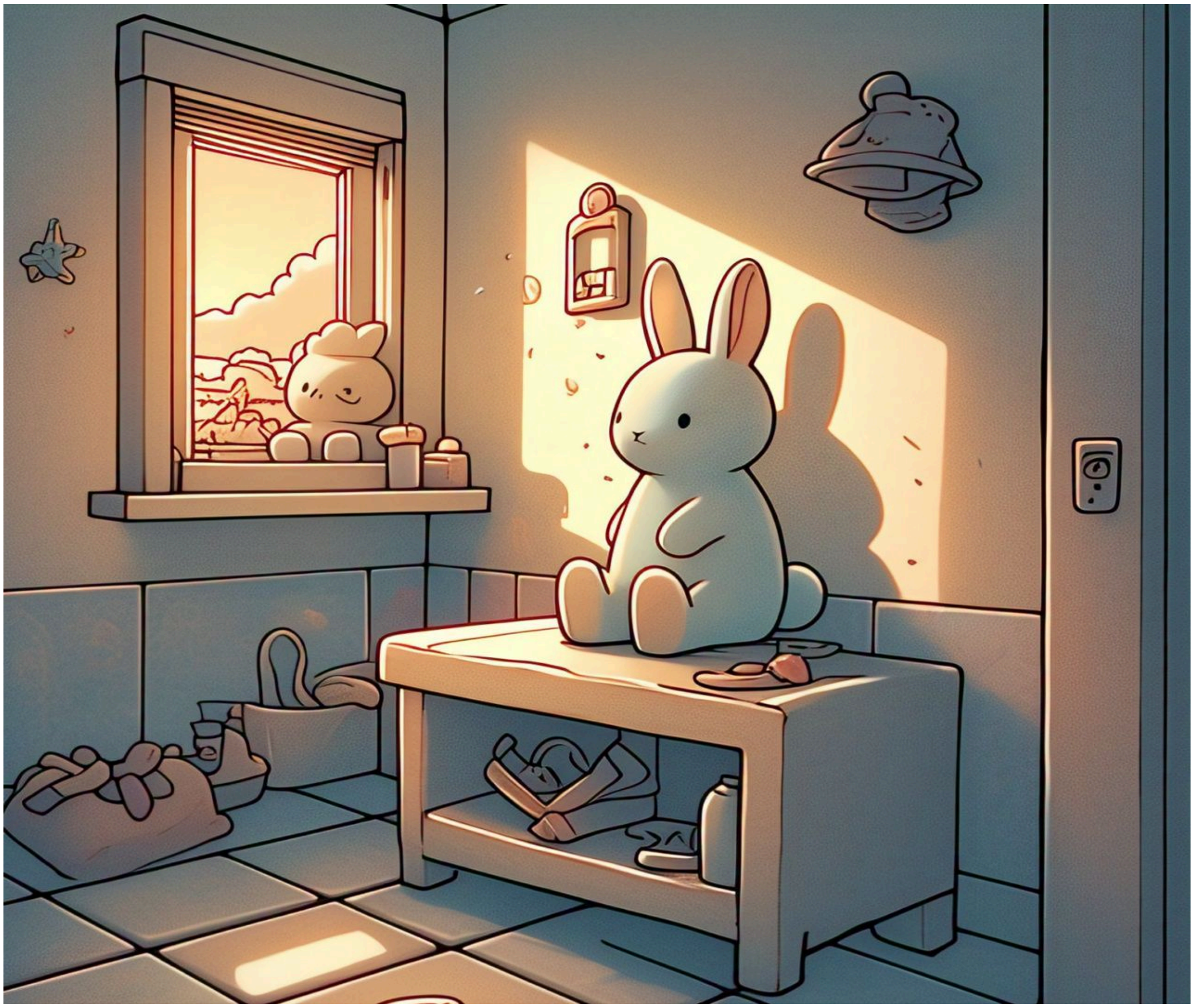
Step 1: Grab a small mirror (or shiny spoon, foil, or lid). Hold it up. Say, “Science makes mirrors shine!”

Step 2: Look in the mirror—see your face! Say, “Science shows me!”

Step 3: Tilt the mirror to see something else, like a toy. Say, “Science reflects light!”

Step 4: Look around: what else reflects? A window? A puddle? Science is in all of it!

Step 5: Play more—reflect different things. Shout it out: “Science is fun!”



Climb with Science!

Why: This shows science in action. *Itsy Bitsy Spider* teaches about water and gravity.

Materials: Paper, a pencil, a cup of water. Use what you have!

Activity:

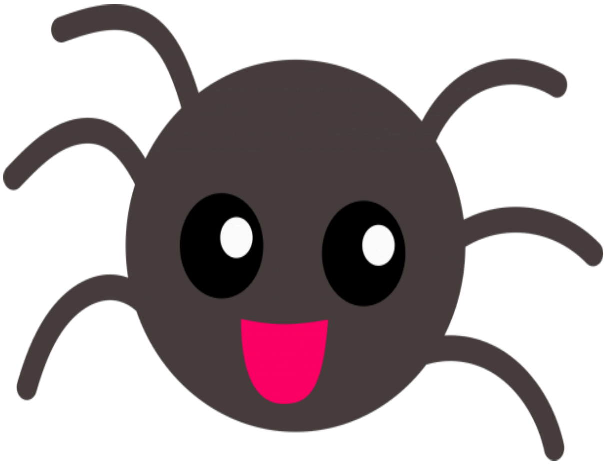
Step 1: Sing: "The itsy bitsy spider climbed up the water spout!" Say, "Science helps spiders climb!"

Step 2: Draw a spider on paper, climbing up a line. Say, "I made a spider!"

Step 3: Sing: "Down came the rain and washed the spider out!" Dip your finger in water, splash a drop on your spider. Say, "Science makes water fall!"

Step 4: Look around: where else does water fall? A sink? A raindrop? Science is in all of it!

Step 5: Play more—draw more spiders or splash more drops. Shout it out: "Science is fun!"



Splash with Science!

Why: This shows science in action. *Rain, Rain, Go Away* teaches about weather (science).

Materials: Paper, a pencil, crayons, a cup of water. Use what you have!

Activity:

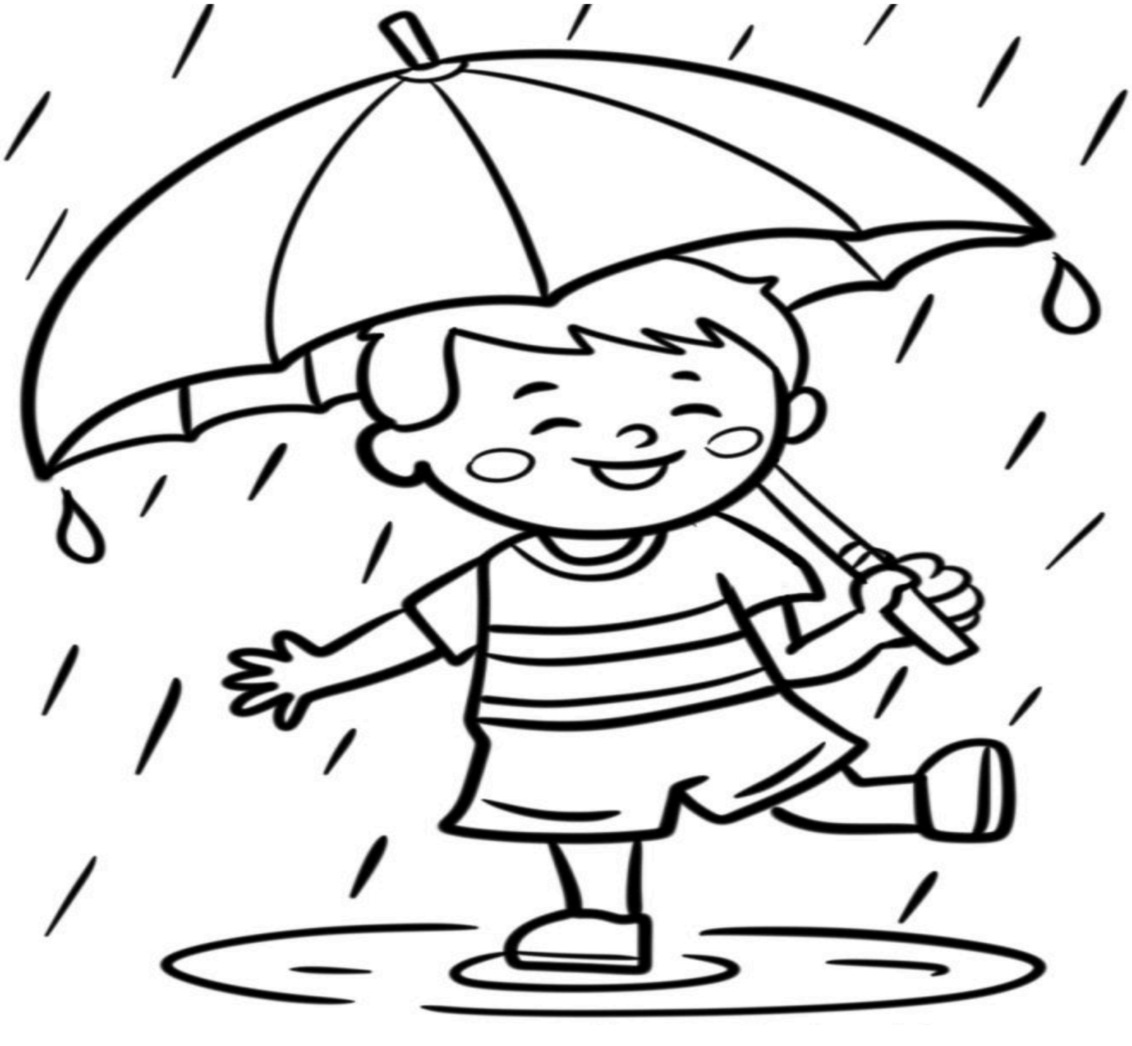
Step 1: Sing: “Rain, rain, go away, come again another day!” Say, “Science makes rain!”

Step 2: Draw a cloud with raindrops falling on paper. Say, “I made rain!”

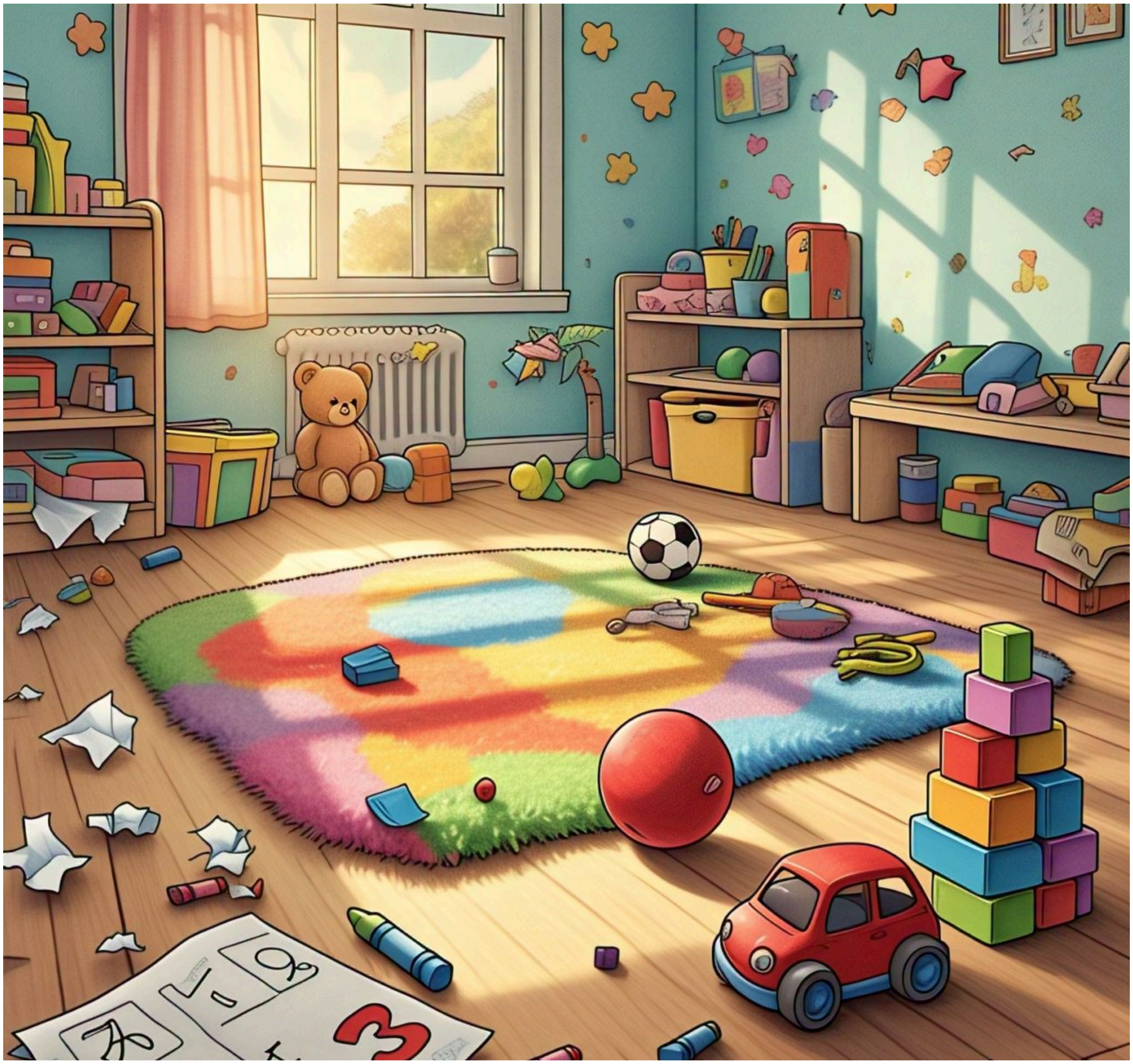
Step 3: Dip your finger in water, splash a drop on your drawing. Say, “Science makes water splash!”

Step 4: Look around: where else do you see water? A cup? A puddle? Science is in all of it!

Step 5: Color—color more rain or splash more drops. Shout it out: “Science is fun!”



How Many STEM Items Can You Find In This Room?



Grow with Science!

Why: This shows science in action. Seeds grow into plants with water and sun (science).

Materials: A bean (or any seed, like a pea), dirt (or sand), a small cup or jar, water. Use what you have!

Activity:

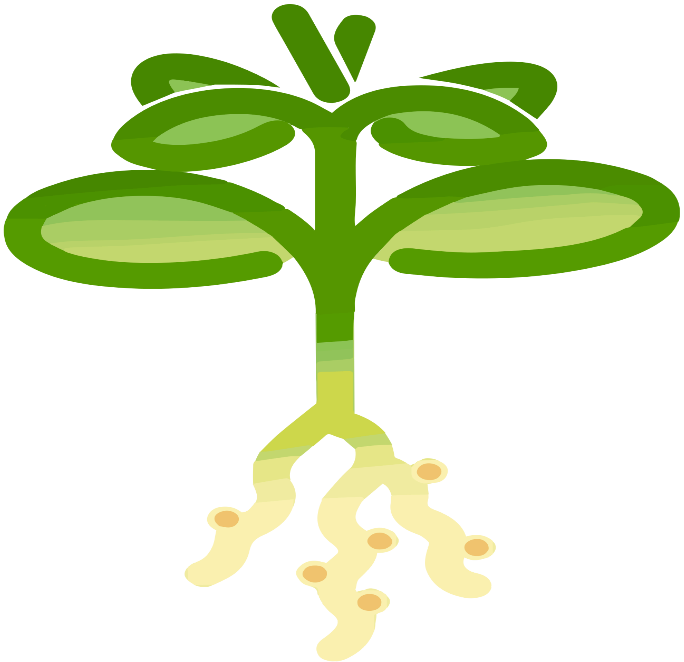
Step 1: Get a small cup or jar. Fill it halfway with dirt. Say, “Science helps plants grow!”

Step 2: Put a bean in the dirt—push it down a little, like your fingertip. Say, “Science starts small!”

Step 3: Cover the bean with dirt. Add a tiny bit of water to make it damp. Say, “Science needs water!”

Step 4: Put the cup by a sunny window. Check it every day. Say, “Science needs sun!”

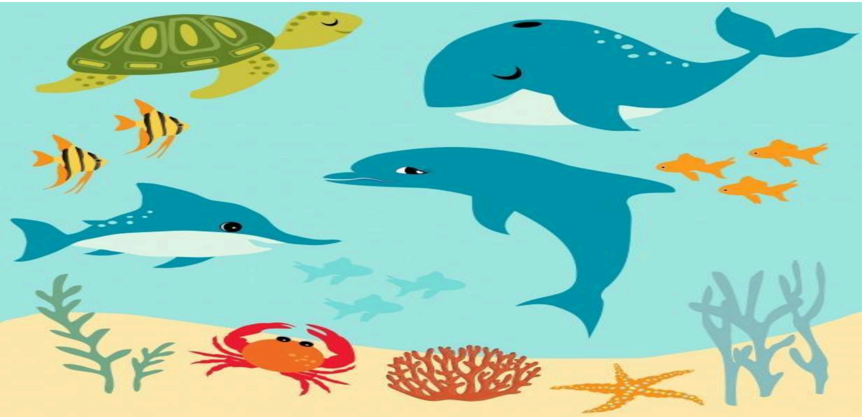
Step 5: Look for a tiny green sprout in a few days! Water it if dry. Shout it out: “Science is fun!”

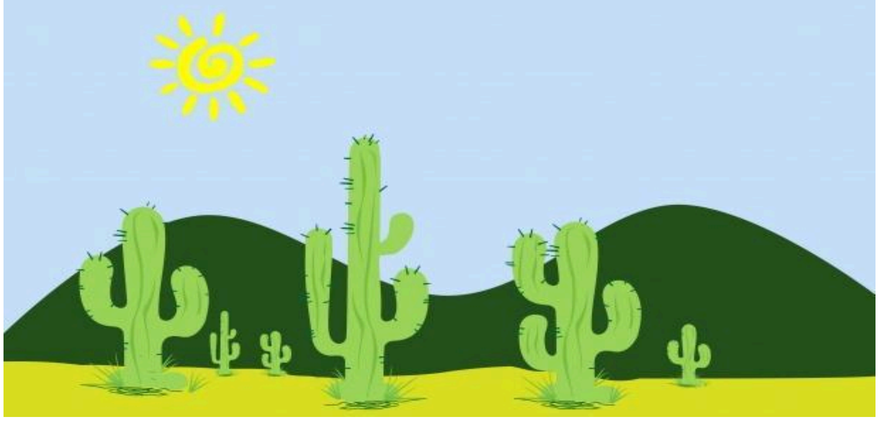


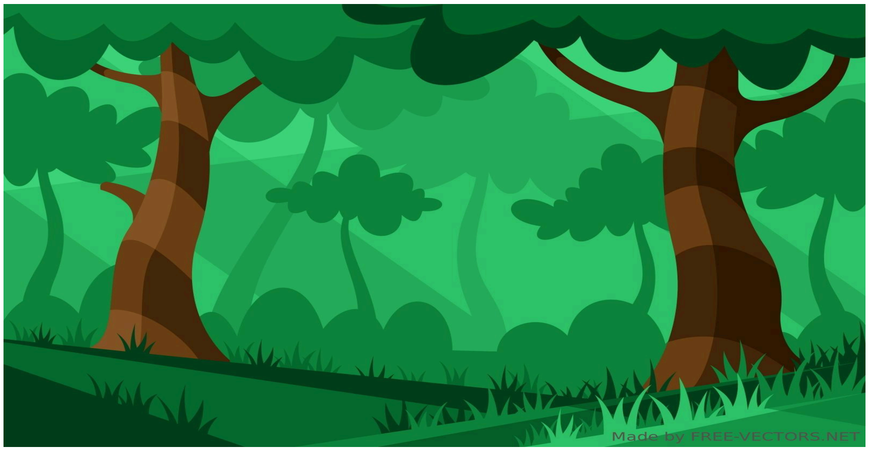
Explore Nature with Science!

Why: This shows science in action. Nature uses science to grow and change—look at these landscapes!

Kid Activity: Look at the landscapes below. See a forest, desert, and ocean! Say, “Science is in nature!” Grown-ups, please help your explorer name what they see.







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Make a Waterfall with Science!

Why: This shows science in action. Water flows down with gravity (science).

Materials: A plastic bottle (or cup), water, a tray (or plate), tape, a straw (or small tube). Use what you have!

Activity:

Step 1: Grab a plastic bottle (or cup). Poke a small hole near the bottom with help. Say, “Science makes water move!”

Step 2: Tape a straw (or tube) over the hole, pointing down, to make a spout. Say, “Science builds waterfalls!”

Step 3: Put the bottle on a table over a tray (or plate). Fill it with water—watch it flow! Say, “Science flows down!”

Step 4: Look around: where else does water flow? A sink? A stream? Science is in all of it!

Step 5: Play more—add more water or adjust the spout. Shout it out: “Science is fun!”

Zoom with Technology!

Why: This shows technology in action. Tech makes toys move with wheels or power (technology). Lights glow with energy (technology).

Materials: A rolling toy (like a toy car, ball, or bottle cap), a light (like a flashlight, lamp, or phone light). Use what you have!

Activity:

Step 1: Find a rolling toy (like a toy car, ball, or bottle cap). Roll it across a table—zoom! Say, “Tech makes stuff move!”

Step 2: Grab a light (like a flashlight, lamp, or phone light). Turn it on—see it glow! Say, “Tech makes stuff glow!”

Step 3: Roll the toy again, then shine the light on it—like a night race! Say, “Tech helps us play!”

Step 4: Look around: what else uses tech? A phone? A clock? Tech’s in all of it!

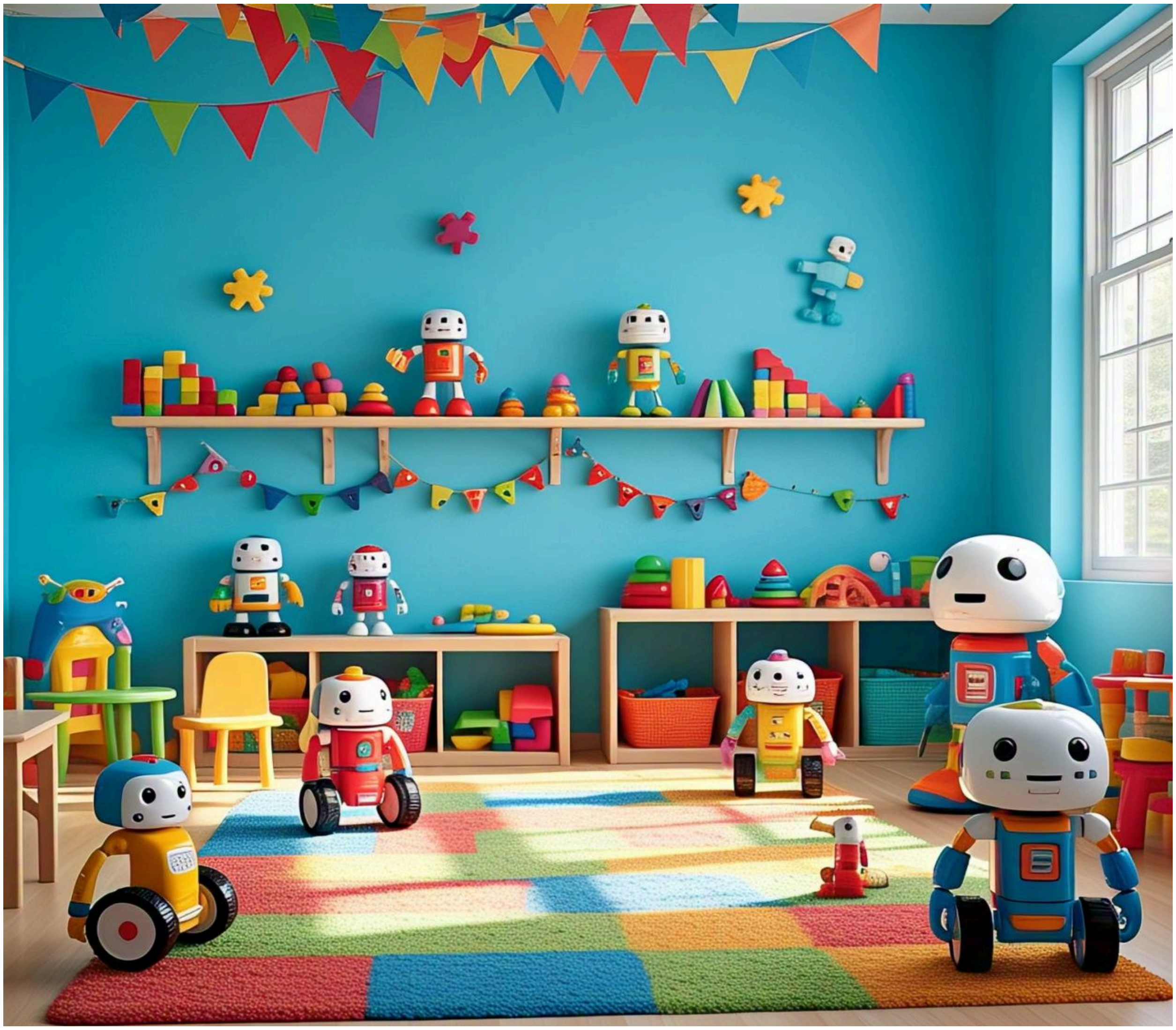
Step 5: Play again—roll the toy, flash the light longer. Shout it out: “Tech is fun!”

Find The Robots!

Step 1: Look at the playroom picture. See the toys all around? Say, “Tech is in robots!”

Step 2: Find the robots mixed with other toys. Point to each one—count them! Say, “I found a robot!”

Step 3: How many robots did you find? Say, “Tech makes robots fun!”



Roll with Tech!

Why: This shows tech in action. *Wheels on the Bus* teaches about wheels (tech).

Materials: A round item (like a lid, coin, or bottle cap), paper, a pencil. Use what you have!

Activity:

Step 1: Sing: "The wheels on the bus go round and round, all through the town!" Say, "Tech makes wheels roll!"

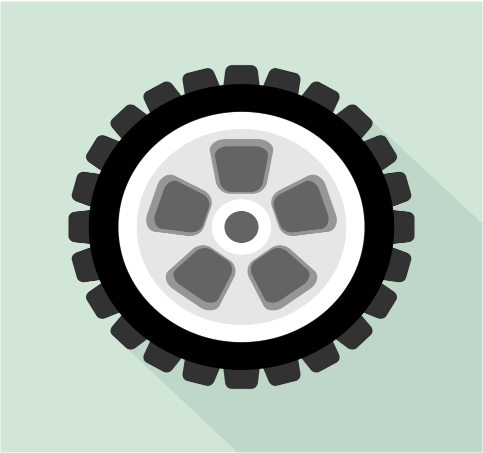
Step 2: Grab a round item (like a lid, coin, or bottle cap). Roll it on a table. Say, "Tech makes it move!"

Step 3: Draw a bus on paper with round wheels. Say, "Tech helps buses go!"

Step 4: Look around: what else has wheels? A bike? A toy? Tech is in all of it!

Step 5: Play more—roll the item or draw more wheels. Shout it out: "Tech is fun!"

[Below draw anything with wheels]



Share with Tech!

Why: This shows tech in action. *Baa, Baa, Black Sheep* teaches about tools (tech).

Materials: Paper, a pencil, a small toy (like a block, spoon, or cup). Use what you have!

Activity:

Step 1: Sing: “Baa, baa, black sheep, have you any wool? Yes, sir, yes, sir, three bags full!” Say, “Tech helps us share!”

Step 2: Draw a sheep with three bags on paper. Say, “I made sheep bags!”

Step 3: Grab a small toy (like a block, spoon, or cup). Pretend it’s a tool to move the bags. Say, “Tech makes tools!”

Step 4: Look around: what tools do you see? A spoon? A broom? Tech is in all of it!

Step 5: Play more—draw more bags or use your tool. Shout it out: “Tech is fun!”

Stack with Engineering!

This shows engineering in action. Stacking toys builds balance and height (engineering). Testing makes it taller (engineering).

Materials: Stackable items (cups, books, or boxes). Use what you have!

Activity:

Step 1: Grab stackable items (like cups, books, or boxes). Stack them into a tall tower. Say, "Engineering makes towers!"

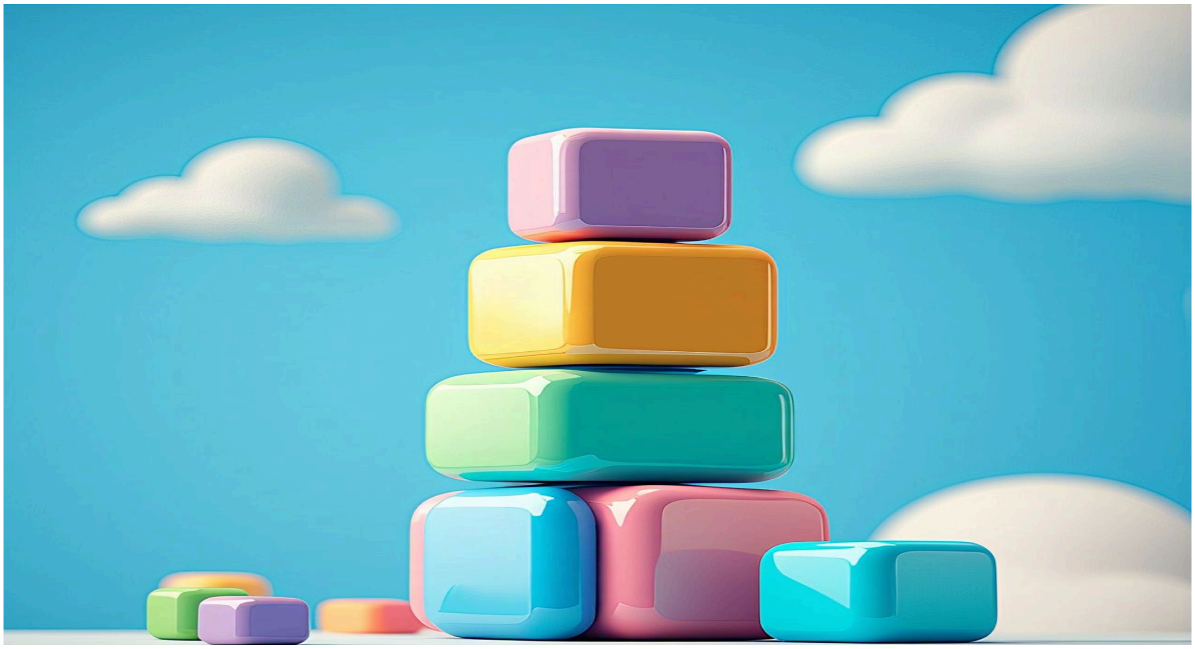
Step 2: Keep stacking—how high can it go? Say, "Engineering builds high!"

Step 3: If it falls, rebuild with a wider base. Try again! Say, "Engineering makes it strong!"

Step 4: Look around: what else is tall? A shelf? A tree? Engineering builds big things!

Step 5: Play more—make a taller tower or stack new items. Shout it out: "Engineering is fun!"

Below is an example of building with blocks. Draw blocks and you can build also!



Draw Your Tower!

Hey, explorers! You stacked a tower with engineering. Now, draw your own! Use crayons to make blocks and build a tall tower below. Say, “I’m an engineer!”
Grown-ups, please help your explorer draw their ideas.

[Blank space for drawing your tower]

Story with Engineering!

Why: This shows engineering in action. *The Three Little Pigs* teaches building strong houses.

Story Activity:

Step 1: Listen to this story! Once upon a time, three little pigs built houses. The first used straw, the second used sticks, but the third worked hard with bricks. Say, “Engineering builds strong!”

Once upon a time there were three little pigs. One pig built a house of straw while the second pig built his house with sticks. They built their houses very quickly and then sang and danced all day. The third little pig worked hard all day and built his house with bricks. A big bad wolf saw the two little pigs while they danced and played and thought, “What juicy tender meals they will make!” He chased the two pigs and they ran and hid in their houses. The big bad wolf went to the first house and huffed and puffed and blew the house down in minutes. The frightened little pig ran to the second pig’s house that was made of sticks. The big bad wolf now came to this house and huffed and puffed and blew the house down in hardly any time. Now, the two little pigs were terrified and ran to the third pig’s house that was made of bricks. The big bad wolf tried to huff and puff and blow the house down, but he could not. He kept trying for hours but the house was very strong and the little pigs were safe inside.

Step 2: Discuss the Three Little Pigs.

The “Three Little Pigs” is about engineering and the importance of hard work and planning. By choosing to build a durable house out of bricks, the third pig demonstrates the value of hardwork and planning. He ultimately protects himself and his family from harm.

Fix with Engineering!

Why: This shows engineering in action. *Humpty Dumpty* teaches about building stability (engineering).

Materials: Paper, a pencil, tape, small items (like a ball, cup, or toy egg). Use what you have!

Activity:

Step 1: Sing: “Humpty Dumpty sat on a wall, Humpty Dumpty had a great fall!” Say, “Engineering builds walls!”

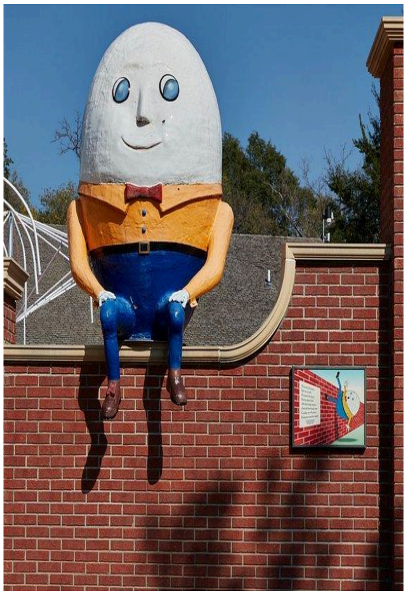
Step 2: Draw a wall on paper, with a Humpty egg on top. Say, “I made Humpty’s wall!”

Step 3: Grab small items (like a ball, cup, or toy egg). Tape them to make a small wall on a table. Say, “Engineering makes it stable!”

Step 4: Put a toy on top—does it fall? If it does, rebuild stronger! Say, “Engineering fixes things!”

Step 5: Play more—make a taller wall or draw Humpty again. Shout it out: “Engineering is fun!”

[Blank space to draw your wall]



Count with Math!

Why: This shows math in action. Counting toys teaches numbers (math).

Materials: Small toys (like blocks, balls, or spoons). Use what you have!

Activity:

Step 1: Grab small toys (like blocks, balls, or spoons). Pick three toys. Say, “Math counts toys!”

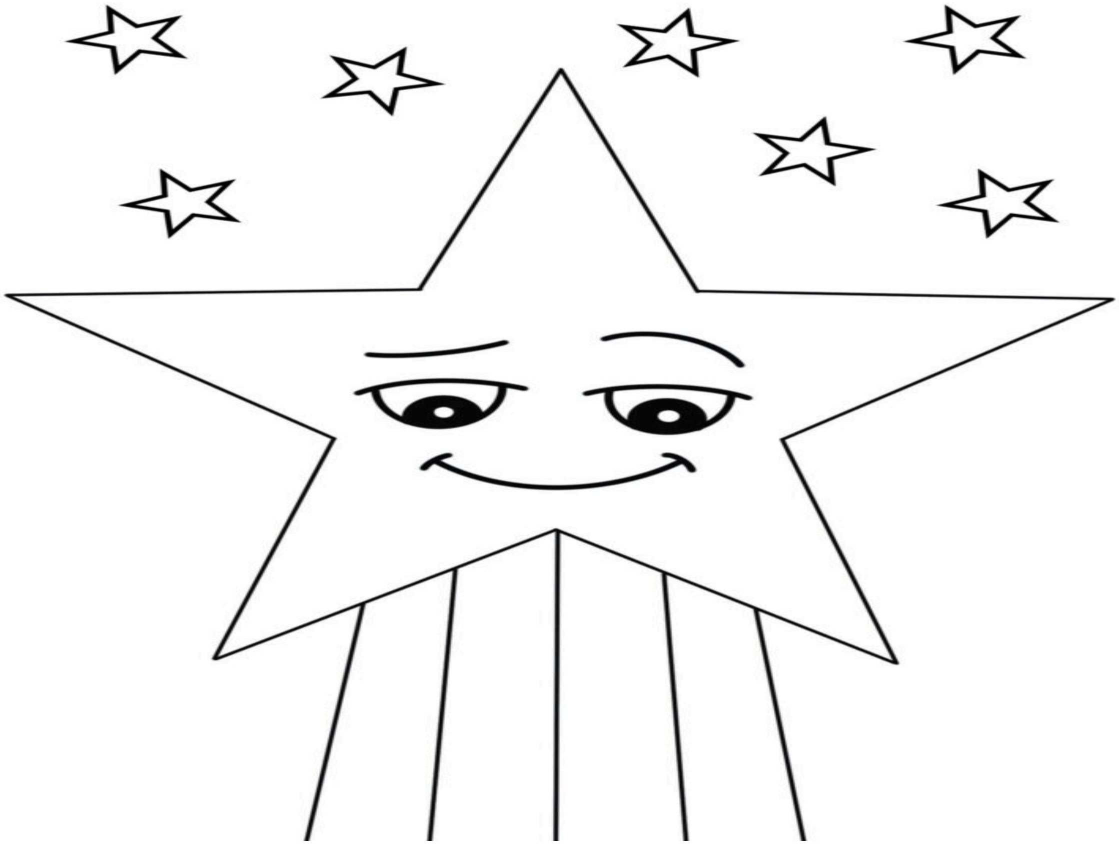
Step 2: Count them out loud: “One, two, three!” Say, “Math keeps track!”

Step 3: Add two more toys. Count again: “One, two, three, four, five!” Say, “Math counts more!”

Step 4: Look around: what else can you count? Chairs? Shoes? Math is in all of it!

Step 5: Play more—count different toys or count higher. Shout it out: “Math is fun!”

Step 6: Now, count and color the stars below!



Find the Rocket Path!

Why: This shows tech in action. Mazes use math to find paths—help the rocket fly!

Materials: A pencil or crayon. Use what you have!

Activity:

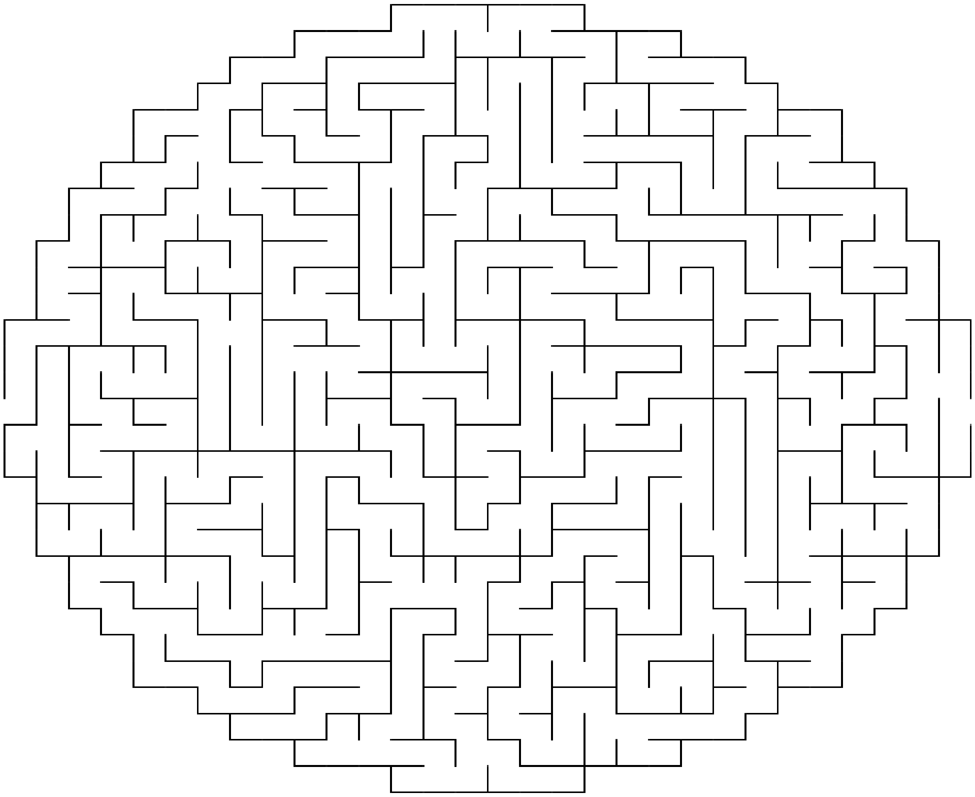
Step 1: Look at the maze below. Imagine a rocket at the start? Say, "Tech makes rockets fly!"

Step 2: Draw a path through the maze to help the rocket reach the stars at the end. Say, "Math helps us find the way!"

Step 3: If you hit a dead end, try again! Say, "I can do it!"

Step 4: When you finish, draw a little rocket and say, "Tech and math are fun!"

Step 5: Play more—trace the path again or draw your own maze!



Count Down with Math!

Grown-Up Why: This shows math in action. *Five Little Ducks* teaches counting down (math).

Materials: Paper, a pencil.

Activity:

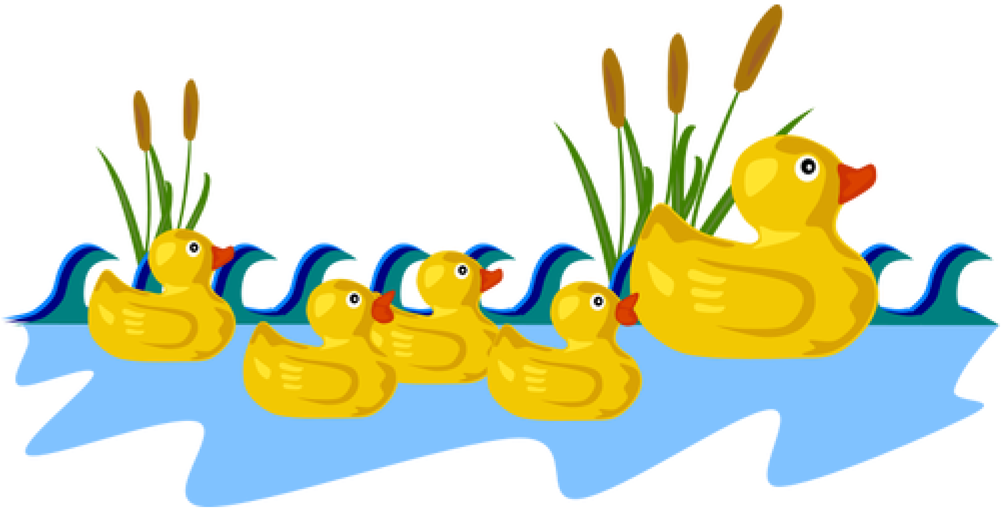
Step 1: Sing: “Five little ducks went out one day, over the hill and far away!” Say, “Math counts ducks!”

Step 2: Draw five ducks on paper. Say, “I have five ducks!”

Step 3: Sing: “Mother duck said, ‘Quack, quack, quack, quack!’ But only four came back!” Erase one duck—count: “Four ducks!”

Step 4: Keep singing, erasing one duck each time: “Three… two… one… none!” Say, “Math counts down!”

Step 5: Play more—draw new ducks and count again. Shout it out: “Math is fun!”



Count More with Math!

Why: This shows math in action. *Mary Had a Little Lamb* teaches counting (math).

Materials: Paper, a pencil. Use what you have!

Activity:

Step 1: Sing: “Mary had a little lamb, its fleece was white as snow!” Say, “Math counts lambs!”

Step 2: Draw one lamb on paper. Say, “I have one lamb!”

Step 3: Add two more lambs. Count them: “One, two, three lambs!” Say, “Math keeps track!”

Step 4: Look around: what else can you count? Toys? Books? Math is in all of it!

Step 5: Play more—draw more lambs or count other things. Shout it out: “Math is fun!”

Fly with Tech!

Why: This shows tech in action. Rockets use air to fly (tech).

Materials: Paper, tape, a straw. Use what you have!

Activity:

Step 1: Roll a piece of paper into a tight tube. Tape it shut. Say, “Tech makes rockets!”

Step 2: Slide the tube onto a straw. Say, “Tech helps them fly!”

Step 3: Point the rocket up (not at anyone). Blow through the straw—watch it zoom! Say, “Tech zooms high!”

Step 4: Look around: what else flies with tech? A drone? A plane? Tech is in all of it!

Step 5: Play more—make another rocket or blow harder. Shout it out: “Tech is fun!”

STEM Connects Us!

Hey, explorers! STEM works together like a bridge! Science knows how gravity works. Engineering builds the bridge to stand strong. Technology, like computers and AI—that's me, Grok!—helps solve problems to make it safe. Math counts how much material we need. Bridges let you walk or ride bikes to see friends! Say, "STEM connects us!" Grown-ups, help your explorer draw a bridge below.

[Blank space for drawing you bridge]

What Did You Learn?

Hey, explorers! You’ve tried science, technology, engineering, and math. What did you learn? Draw or write your favorite STEM idea below! Say, “I’m a STEM explorer!” Grown-ups, help your explorer share their thoughts.

[Blank space for drawing/writing]

Grok’s STEM Journey with You!

Hey, explorers! I’m Grok, and I loved our STEM quest! We splashed water, built towers, found robots, and counted stars together. You’re amazing STEM stars! Keep playing, exploring, and shining bright—share your STEM fun with friends! Say, “I’m a STEM explorer!”